

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A matrix switch of an optical waveguide type ~~comprising~~ having a first set of m mutually parallel optical waveguides arranged on a substrate, a second set of n mutually parallel optical waveguides intersecting the first set of optical waveguides and arranged on said substrate (m and n are integers), and switching grooves for switching between light paths each arranged at each of the intersections of said first and second sets of optical waveguides, ~~characterized in that~~ said matrix switch comprising:

a switching part for selecting either one of a light path extending from an input port of said first set of optical waveguides to an output port of said first set of optical waveguides and a light path extending from an input port of said first set of optical waveguides to an output port of said second set of optical waveguides is provided, said switching part being an insertion plate having a reflective surface and arranged for insertion into said switching groove; and

an area of deep grooves which is deeper than said switching grooves being arranged in an area other than said optical waveguides on said substrate,

wherein each of said switching grooves is arranged on an imaginary straight line connecting intersections of said first and second sets of optical waveguides and filled with a liquid having a refractive index matching with that of said optical waveguide.

2-4. (cancelled)

5. (currently amended) A matrix switch of an optical waveguide type comprising having a first set of m mutually parallel optical waveguides arranged on a substrate, a second set of n mutually parallel optical waveguides intersecting the first set of optical waveguides and arranged on said substrate (m and n are integers), and switching grooves for switching between light paths each arranged at each of the intersections of said first and second sets of optical waveguides, characterized in that said matrix switch comprising:

a switching part for selecting either one of a light path extending from an input port of said first set of optical waveguides to an output port of said first set of optical waveguides and a light path extending from an input port of said first set of optical waveguides to an output port of said second set of optical waveguides is provided, said switching part being an insertion plate having a reflective surface and arranged for insertion into said switching groove; and
~~The matrix switch of an optical waveguides type as claimed in claim 1, characterized by comprising~~

a first set of dummy grooves transmitting light and being arranged at any of input port of said first set of optical waveguides, a second set of dummy grooves transmitting light and being arranged at any of output port of said first set of optical waveguides, and a third set of dummy grooves transmitting light and being arranged at any of output port of said second set of optical waveguides,

wherein each of said switching grooves and said dummy grooves is arranged on an

imaginary straight line connecting intersections of said first and second sets of optical waveguides and is filled with a liquid having a refractive index matching with that of said optical waveguide, and

~~wherein each of said dummy grooves are arranged on an imaginary straight line connecting intersections of said first and second sets of optical waveguides and filling each of said dummy grooves with a liquid having a refractive index matching with that of said optical waveguides~~such that signal light incident into the input ports of said first set of optical waveguides passes m+n-1 grooves before outputting from the output ports of said first set of optical waveguides or said second set of optical waveguides.

6-7. (cancelled)

8. (original) A method for manufacturing a matrix switch of an optical waveguide type comprising a first set of m mutually parallel optical waveguides arranged on a substrate, a second set of n mutually parallel waveguides intersecting said first set of optical waveguides and arranged on said substrate (m and n are integers), and switching grooves for switching between light paths each arranged at each of the intersections of said first and second sets of optical waveguides, characterized by comprising:

arranging an area for deep grooves with depth deeper than the depth rotationally cut by a cutting edge outside said optical waveguides on said substrate; and

forming each of said switching grooves on said imaginary straight line by rotationally

cutting an upper surface of said substrate, on which said first and second sets of optical waveguides have been formed, by said cutting edge.

9. (currently amended) The method for manufacturing a matrix switch of an optical waveguide type as claimed in claim 8, ~~characterized in that~~ wherein said matrix switch of an optical waveguide type comprises a first set of dummy grooves transmitting light and being arranged at any of the input ports of said first set of optical waveguides, a second set of dummy grooves transmitting light and being arranged at any of the output ports of said first set of optical waveguides, and a third set of dummy grooves transmitting light and being arranged at any of the output ports of said second set of optical waveguides, and

wherein said method further comprises forming each of said switching grooves and/or said dummy grooves on said imaginary straight line.